

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/001989

## A. CLASSIFICATION OF SUBJECT MATTER IPC<sup>7</sup>: F01C 1/344 and F02B 53/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: F01C and F02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Delphion and Canadian Patent Database; and search terms used: engine, pump, toroidal, toric, impeller, gear, elliptical, cylinder, rotor, driv and train

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 6,457,451 B1 (SAKITA) 01 October 2002 (01-10-2002) Abstract; figures 1 to 8, 12, 13, 21 to 27; column 2, line 66 to column 3, line 64; and	1, 6 and 7
Y	claims 1 to 6	2, 3 and 9
X	US 5,622,149 A (WITTRY) 22 April 1997 (22-04-1997)	1, 6 and 7
Y	Abstract; figures 1a to 8b; column 9, lines 44 to 66; and claims 1 to 29	2, 3 and 9

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:  
 "A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier application or patent but published on or after the international filing date  
 "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document referring to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
 "&" document member of the same patent family

Date of the actual completion of the international search  
28 February 2005 (28-02-2005)

Date of mailing of the international search report  
29 March 2005 (29-03-2005)

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 5,405,300 A (SAKITA) 11 April 1995 (11-04-1995)	1, 6 and 7
Y	Abstract; figures 1 to 8D; and claims 1 to 5	2, 3 and 9
X	US 4,068,985 A (BAER) 17 January 1978 (17-01-1978)	1, 6 and 7
Y	Abstract; figures 1 to 7F, and claims 1 to 55	2, 3 and 9
Y	US 3,061,180 A (DURGIN) 31 October 1960 (31-10-1960) Figures 1 to 3; and claims 1 to 5	2, 3 and 9
Y	US 3,398,643 A (SCHUDT) 27 June 1966 (27-06-1966) Figures 1 to 12; and claim 1	2, 3 and 9

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## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

1. ☐ Claim Nos. :

because they relate to subject matter not required to be searched by this Authority, namely :

2. ☐ Claim Nos. :

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :

3. ☐ Claim Nos. :

because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows :

Claims 1, 3, 4, 5, 6, 7 and 8 are directed toward an engine or pump assembly

Claims 2 and 9 are directed toward a drive train comprising elliptical gears.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :

**Remark on Protest** ☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

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## Information on patent family members

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6457451	01-10-2002	US6446595 B1	10-09-2002
		US6457452 B1	01-10-2002
		WO03004843 A1	16-01-2003
		WO03004844 A1	16-01-2003
		WO03008781 A1	30-01-2003
US5622149	22-04-1997	US5433179 A	18-07-1995
		WO9515429 A1	08-06-1995
US5405300	11-04-1995	DE4436822 A1	11-05-1995
		JP3008252B2 B2	14-02-2000
		US5381766 A	17-01-1995
US4068985	17-01-1978	none	17-01-1978
US3061180	30-10-1962	none	30-10-1962
US3398643	27-08-1968	none	27-08-1968